US Army Corps of Engineers
Kansas City District

TUTTLE CREEK DAM

FACT SHEET

April 2001

EARTHQUAKE EFFECTS ON STRUCTURES

General.

The outlet works includes the intake tower, bridge to the tower, conduit and stilling basin. Each of these structures is important to the routine operation of the dam and the ability to control releases from the lake. However, the intake tower and the conduit are more important than the bridge and stilling basin with regard to making releases following a damaging earthquake. Even with damage to the bridge personnel could enter the intake tower and operate the gates. Releases from the lake can also be made with earthquake damage to the stilling basin.

A detailed evaluation of each of these structures was performed and the results are listed below.

Intake Tower.

The intake tower contains the gates that control the release of water through the conduit. The intake tower was evaluated for the maximum credible earthquake. This evaluation determined the intake tower would survive this event although some cracking of the concrete is to be expected. It was determined that equipment in the intake tower will need to be anchored or supported to ensure that the gates remain operational.

Conduit.

The conduit evaluation compared the ability to survive the maximum credible earthquake to other conduits that have survived severe earthquakes. The conduit was considered structurally adequate for earthquake forces.

Bridge and Stilling Basin.

Because the bridge to the intake tower and the stilling basin are less critical to ensuring that releases can be made, they were evaluated using less stringent criteria. The bridge and the stilling basin will not be significantly damaged by small earthquakes but may be subject to damage during a major earthquake. Since these structures are not critical to making releases, this damage can be tolerated.

This fact sheet is published by the U.S. Army Corps of Engineers, the lead agency for the Tuttle Creek Dam Safety Assurance Program.
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